REMARKS

Claims 1-15, 17-27 and 29-45 are pending and rejected. Claims 1, 11, 13, 26, 29, 30, 33, 42, 44, and 45 have been amended herein, for clarification. Claims 29 and 30 were canceled. No new matter has been entered.

Rejections under §112

Claims 11, 13 and 42 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Specifically, claims 11 and 13 were rejected due to the use of the claim term "proximate". Without admission, this claim term has been removed from the claims, thus the rejection under §112 is moot and should be removed. Similarly, claim 42 does not recite "substantial portions", thus the rejection of this claim term under §112 is moot and should also be removed. Accordingly, the rejections under §112 are respectfully traversed

Rejections under §§ 102 and 103

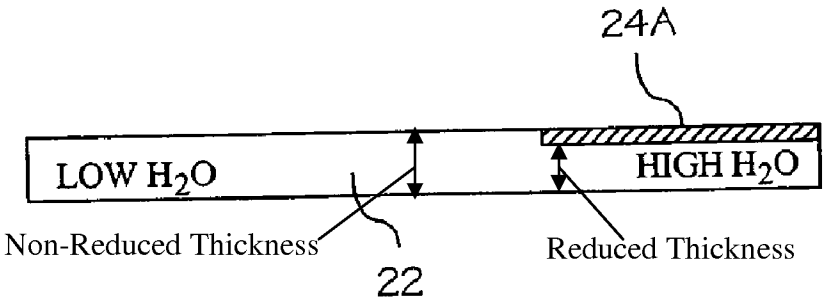
Claim 44 was rejected under 35 U.S.C. 102(b) as being anticipated by Isono et al (US 6,365,293). Claims 1-15, 17-22, 29-31, 33 and 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isono et al in view of Yasumoto et al (US 2003/0198860). Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isono et al in view of Yasumoto et al as applied to claims 1-15, 17-22, 29-31, 33 and 38-39 above and in further view of Fuglevand et al (US 6,939,636). Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Isono et al in view of Yasumoto et al as applied to claims 1-15, 17-22, 29-31, 33 and 38-39 above and in further view of Fuglevand et al. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isono et al in view of Yasumoto et al as applied to claims 1-15, 17-22, 29-31, 33 and 38-39 above and in further view of Zuber et al (US 2002/0041992; newly cited reference). Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Isono et al in view of Yasumoto et al as applied to claims 1-15, 17-22, 29-31, 33 and 38-39 above and in further view of Wood, III et al (US 6,350,539). Claims 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isono et al in view of Yasumoto et al

as applied to claims 1-15, 17-22, 29-31, 33 and 38-39 above and in further view of Johnson et al (US 5,840,438). Claims 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isono et al in view of Yasumoto et al as applied to claims 1-15, 17-22, 29-31, 33 and 38-39 above and in further view of Mussell et al (US 5,620,807). Claims 42, 43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isono et al. These rejections are respectfully traversed.

Independent claims 1, 33, 44, and 45

Independent claims 1, and 33 recite *inter alia*, a mesoporous layer, which is carried along a reduced thickness portion of at least one of the first and second diffusion media substrates and/or at least partially infiltrates at least one of the first and second diffusion media substrates to a depth of greater than zero μm to about 10μm in said high H_2O regions and a depth of greater than 0 μm to about 25μm in said low H_2O regions. Similarly, claims 44 and 45 recite, *inter alia*, a mesoporous layer at least partially infiltrating at least one of the first and second diffusion media substrates to a depth of greater than zero μm to about 10μm in said high H_2O regions and a depth of greater than zero μm to about 25μm in said low H_2O regions. The cited references fail to teach or suggest a device for converting fuel into energy and comprising these claimed elements.

For instance, Isono fails to teach a mesoporous layer carried along a reduced thickness portion of the first and second diffusion media substrates. The examiner recognizes that Isono fails to teach reduced thickness portions and non-reduced thickness portions along the first or second diffusion media substrates. To combat this deficiency, the examiner states that the recitation is unclear, and interprets the reduced thickness portion as being along the entire length of the diffusion media substrate. However, the claims are clear in view of the specification, and the examiner's interpretation is improper. Referring to the embodiments of Figs. 5-7 of the present application, the substrate 22 may have variable thicknesses. Viewing Fig. 6 below, the



substrate 22 may have varying thicknesses along its length, and the mesoporous layer 24A may be oriented along the reduced thickness portion. (page 6, lines 22-27). The claim is not unclear for not specifically reciting where the reduced thickness portion begins and where the reduced thickness portion ends. One of ordinary skill in the art would understand that the substrates have variable thickness regions without knowing the exact intersection point of the reduced thickness and non-reduced thickness portions along a portion of the substrate surface. As a result, this claim term should be given full patentable weight.

Isono fails to teach a reduced thickness portion along the first or second substrate. Referring to Fig. 6, Isono teaches a mesoporous layer along the entire substrate surface, not a mesoporous layer along a portion of the first or second media substrates as claimed. When considering these two deficiencies, Isono clearly fails to teach a mesoporous layer carried along a reduced thickness portion of at least one of the first and second diffusion media substrates as recited in claim 1 and 33.

Isono also fails to teach or suggest the at least partial infiltration of the mesoporous layer into the first or second diffusion media substrates. On page 8 of the Office Action, the examiner stated that Isono overlapped with the infiltration depth ranges of less than 10 μm in high H2O regions and less than 25 μm in low H2O regions as previously recited in canceled claims 29 and 30, because Isono teaches an infiltration depth of zero. (*See* 7/3/06 Office Action, Page 8). In short, the examiner recognizes that Isono fails to teach infiltration of the mesoporous layer into the first or second substrates at a depth of greater than zero in the low and high H2O regions as claimed. Recognizing this deficiency, the Examiner states that the diffusion media substrate layers are porous layers with irregularities on the surface. Due to these asserted irregularities, the examiner contends that the mesoporous layer will infiltrate the substrate on the micro-level. However, there is no teaching or suggestion that these irregularities will cause infiltration into

the media substrates as claimed, nor is there a teaching, besides the Applicant's specification, to modify Isono to teach the claimed infiltration. "The mere fact that prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. *In re Fritch*, 23 USPQ2d 1780, 1783-4 (Fed. Cir. 1991). As a result, Isono fails to teach a depth of greater than zero μm to about 10μm in said high H_2O regions and a depth of greater than zero μm to about 25μm in said low H_2O regions. The additional cited references fail to cure the above noted deficiencies of Isono. Accordingly, the claims 1, 33, 44 and 45, and all claims dependent thereon are in condition for allowance.

Independent claim 42

Claim 42 recites a mesoporous layer comprising, *inter alia*, a mesoporous layer relative to a region of decreased porosity of the mesoporous layer. As the examiner recognizes, none of the references teach or suggest the elements of claim 42, as demonstrated by the examiner's indication of allowance in prior office actions. To cure this noted deficiency, the examiner asserts that porosity is a result effect variable. Using impermissible hindsight, one of skill in the art may view porosity as a variable and thus increase the level of porosity along the entirety of a surface; however, there is no teaching or suggestion to have multiple regions of varying porosity on the mesoporous layer as claimed. Consequently, none of the references teach or suggest all elements of claim 42 and its dependents thereon. Thus, prima facie obviousness has been established, and the rejection under § 103 should be removed.

Conclusion

The Applicants respectfully submit that the application is in condition for allowance. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully requested.

Respectfully submitted,

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